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SHE GUARDIAN – AI SAFETY SYSTEM FOR WOMEN

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ABSTRACT
The Women's safety during travel and daily mobility remains a significant concern in modern society. Most existing safety systems rely on manual emergency activation, which may fail during critical situations. To address this limitation, this paper proposes "She Guardian", an AI-based women safety system that provides real-time monitoring and automated emergency response.
The system integrates GPS-based location tracking, voice-activated SOS alerts, route deviation detection, and AI-based distress analysis to identify potential danger situations. It uses a dual-layer security model that combines a community-based guardian network with continuous AI monitoring to ensure faster and more reliable assistance.
The proposed system enhances safety by reducing response time, improving threat detection, and enabling proactive protection. By leveraging Artificial Intelligence, mobile technology, and cloud communication, She Guardian provides an efficient and scalable solution for real-world women safety challenges. Women's safety during travel and daily mobility remains a significant concern in modern society. Most existing safety systems rely on manual emergency activation, which may fail during critical situations.
To address this limitation, this paper proposes "She Guardian", an AI-based women safety system that provides real-time monitoring and automated emergency response.
The system integrates GPS-based location tracking, voice-activated SOS alerts, route deviation detection, and AI-based distress analysis to identify potential danger situations. It uses a dual-layer security model that combines a community-based guardian network with continuous AI monitoring to ensure faster and more reliable assistance.

Keywords
AI, ML, GPS, NLP, Mobile App, Android, Firebase, Cloud Database, Real-Time Tracking, SOS Alert, Voice Recognition, Sentiment Analysis, Route Detection, Emergency System, Notification System, Security System, IoT, API, UI, Data Analysis

INTRODUCTION
Women's safety has become a critical concern in modern society, particularly during travel and daily mobility. Many women face risks such as harassment, unsafe environments, and delayed emergency response, especially while commuting alone or during night hours. Existing safety systems and mobile applications primarily depend on manual activation of emergency alerts, which may not be effective in critical situations where users are unable to access their devices.
To overcome these limitations, there is a need for an intelligent and proactive safety system that can monitor user conditions continuously and respond automatically to potential threats. In this context, the proposed system, "She Guardian", is an AI-based women safety application designed to provide real-time monitoring and emergency support.
The system integrates technologies such as GPS-based location tracking, voice-based SOS detection, and Artificial Intelligence for risk analysis. It is capable of identifying unusual patterns such as route deviations, abnormal movement, and distress signals, and automatically triggering alerts to emergency contacts or nearby guardians. The dual-layer security model, combining community support and AI-based monitoring, enhances response time and reliability.

OBJECTIVES
The primary objectives of the proposed She Guardian system are:

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1. To develop an AI-based women safety system for real-time monitoring and emergency .
2. To collect and process historical stock price data along with marketrelated information.
3. To apply data preprocessing and feature engineering techniques for improving data quality.
4. To utilize voice recognition and AI techniques for detecting distress signals
5. To identify abnormal behavior such as route deviation using predictive analysis.
6. To enable a community-based guardian support system for faster local assistance.
7. To ensure data security, privacy, and a user-friendly mobile application interface.
8. To compare different model approaches and identify the bestperforming method.
9. To develop an AI-based women safety system for real-time monitoring and emergency..
10. To identify abnormal behavior such as route deviation using predictive analysis.

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METHODOLOGY

The methodology outlines a structured process for developing the She Guardian system, ensuring real-time monitoring, accurate risk detection, and rapid emergency response through sequential stages.

1. **Data Collection:** Real-time data such as user location, movement patterns, and voice inputs are collected through mobile sensors and device features..
2. **Data Preprocessing:** Collected data is cleaned and processed to remove noise, normalize inputs, and ensure consistency for analysis.
3. **Feature Engineering:** Key features such as location coordinates, route patterns, voice signals, and user behavior indicators are extracted for analysis.
4. **System Integration:** Modules such as GPS tracking, voice recognition, AI-based risk detection, and alert systems are integrated into a unified mobile application.
5. **Risk Detection:** Machine Learning and AI techniques are used to identify abnormal conditions such as route deviation, unusual inactivity, or distress signals.
6. **Voice Analysis:** Natural Language Processing (NLP) is applied to detect emergency keywords and analyze voice tone for distress recognition.
7. **Alert Generation:** Automated SOS alerts and notifications are triggered when risk conditions are detected or manually activated by the user..
8. **Communication System:** Alerts along with real-time location details are sent to emergency contacts, nearby guardians, or authorities using cloud-based services
9. **Monitoring & Visualization:** The system provides real-time tracking and status updates through a user-friendly mobile interface..

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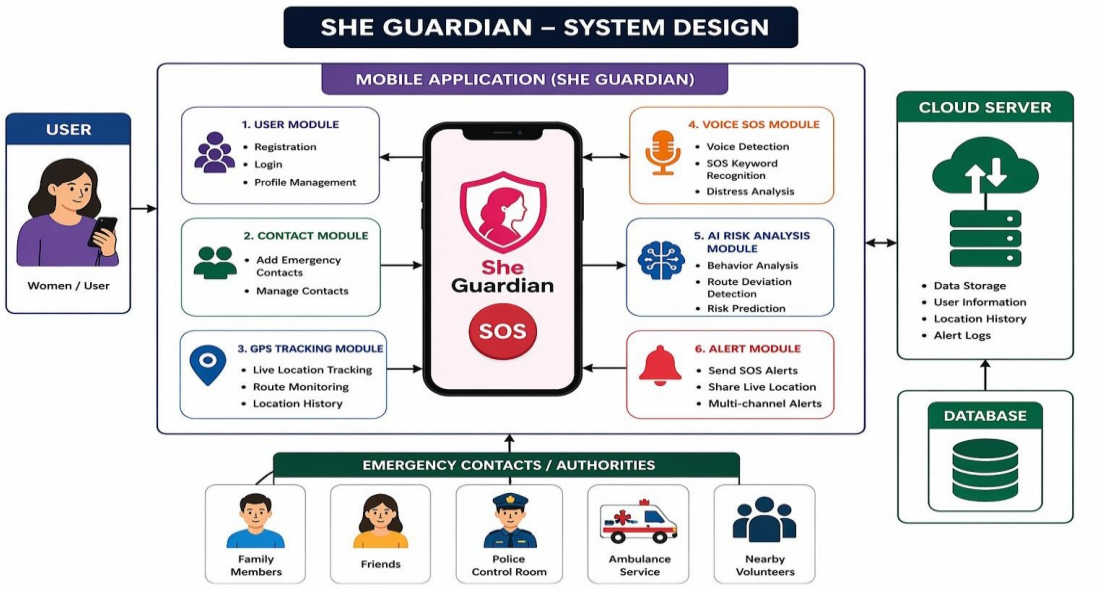

Figure 1: Overall System Architecture Diagram of the Project

RESULTS AND DISCUSSION

This The She Guardian system was successfully implemented as a mobile-based application integrating GPS tracking, voice-based SOS detection, and AI-driven risk analysis. The system was tested under different real-time scenarios to evaluate its performance, reliability, and responsiveness.

The GPS tracking module provided accurate real-time location updates, enabling continuous monitoring of user movement. The route deviation detection mechanism effectively identified unusual travel patterns and triggered alerts when abnormal conditions were observed.

The voice-based SOS feature demonstrated the ability to recognize emergency keywords and distress signals, allowing hands-free activation of alerts. This significantly improved usability in critical situations where manual interaction is not possible.

The AI-based risk detection module showed reliable performance in identifying suspicious behavior such as inactivity, abnormal movement, and unexpected route changes. The integration of automated alert generation reduced response time compared to traditional manual systems.

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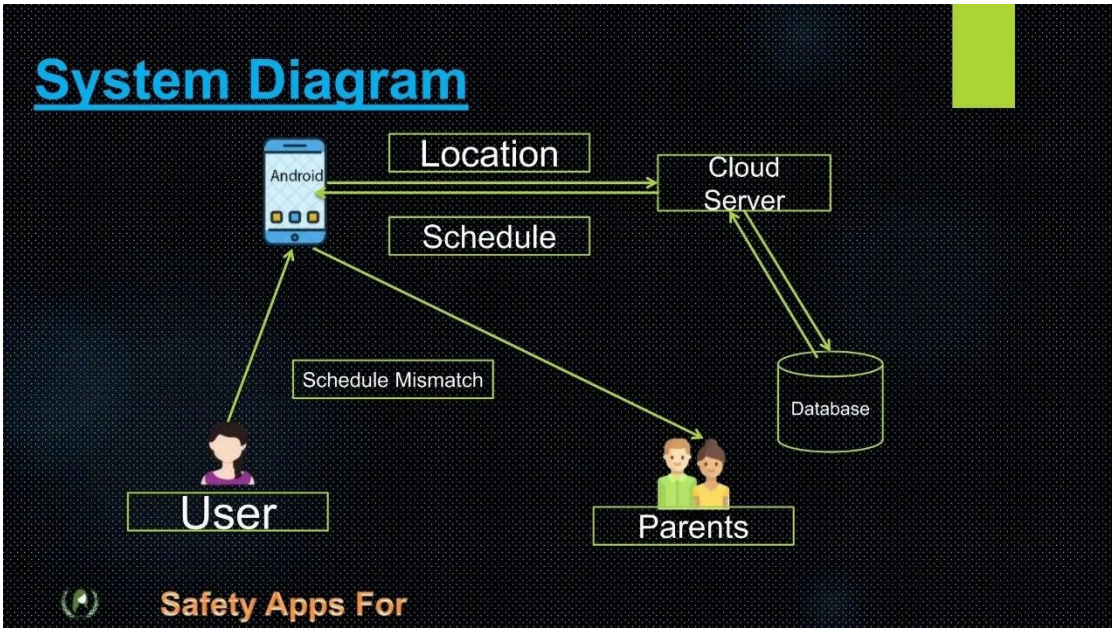

Figure 5: DATA FLOW DIAGRAM

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CONCLUSION

The She Guardian system demonstrates how Artificial Intelligence can be effectively applied to enhance women's safety through real-time monitoring and automated emergency response. The proposed system integrates GPS tracking, voice-based SOS detection, and AI-driven risk analysis to identify potential threats and generate instant alerts.

The implementation results indicate that the system improves response time, enhances detection accuracy, and provides a proactive approach compared to traditional safety applications that rely on manual activation. The dual-layer security model combining AI monitoring and community-based support further strengthens reliability and emergency assistance.

Overall, the system offers a practical and scalable solution for real-world women safety challenges by leveraging mobile technology, cloud communication, and intelligent analysis. Future enhancements may include integration with wearable devices, IoT systems, and advanced predictive models to further improve system performance and coverage.

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